HP SURESTORE E DISK ARRAY FC60
INSTALLATION QUICK REFERENCE

This information is condensed from the *HP SureStore E Disk Array FC60 Service Manual.*

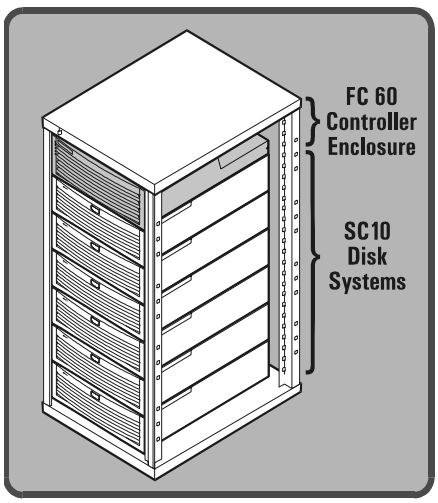
Preparing for the Installation

- ✓ Ensure all site environmental requirements are met.
- ✓ Ensure all host system requirements are met.
- ✓ Unpack and check the contents of the FC60 controller enclosure and all SC10 disk enclosures.
- ✓ Gather the following tools:
  - Torx T25 screwdriver
  - Torx T15 screwdriver
  - Small flat-blade screwdriver
- ✓ Have the following documentation available:
  - *HP SureStore E Disk Array FC60 Service Manual*
  - *HP-UX Enablement Software Installation Instructions* (HP-UX installations)
  - *HP Storage Manager 60-NT User's Guide* (Windows NT installations)

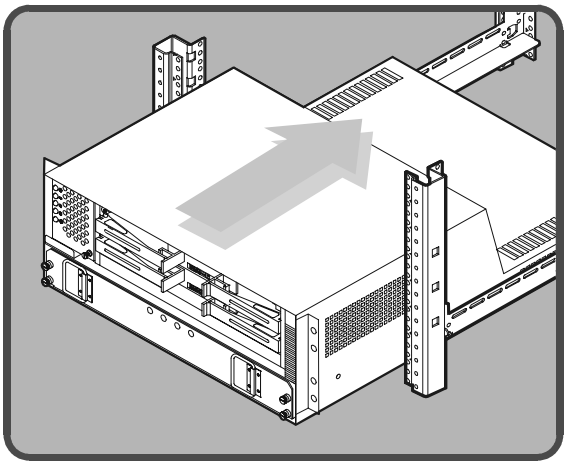
Note The latest versions of the FC60 documentation (except for the service manual) can be downloaded from the following web site: **http://www.hp.com/support/fc60**

Preparing the Rack

- ✓ Install any required PDU/PDRUs in the rack.
- ✓ Install the rail mounting kits for the disk array controller enclosure and the disk enclosure(s). Instructions are included with the rail kits for installing the rails in the rack.
- ✓ The following rail kits are available:
  - HP A5250A for legacy HP Racks (included with A5277A)
  - HP A5251A for HP Rack System/E (included with A5277A and A5635A)
  - HP 5656A for Rittal 9000 racks (included with A5635A)
- ✓ The recommended rack configuration for the Disk Array FC60 components is the controller enclosure installed in the upper portion of the rack and the disk enclosures beneath it.

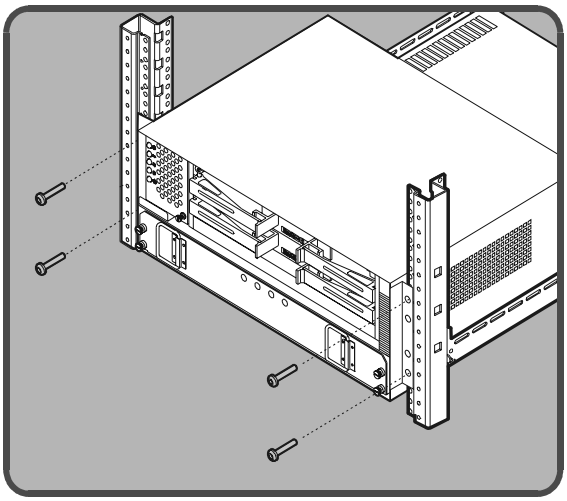


Installing the Enclosures

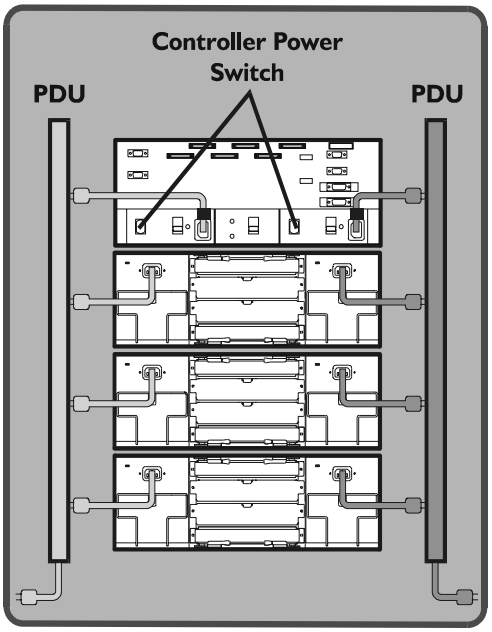


1. Slide the enclosure into the rack.

WARNING! The enclosures are heavy! Do not attempt to install them without the aid of another person or a lift device.



2. Install the mounting screws to secure the enclosure to the rack.
   - The controller enclosure is installed with four screws.
   - The disk enclosure is installed with two screws.



3. Make sure the power switches on all the disk array components are set to OFF.
   - The controller enclosure has two power switches located on the rear of the enclosure.
   - The disk enclosure has a single power switch located in the upper right corner of the front panel.
4. Connect the power cables to the disk array enclosures.

Setting the Configuration Switches

Disk Enclosure

The disk enclosure configuration switches are shown on the cabling drawings on page 4 and page 5.

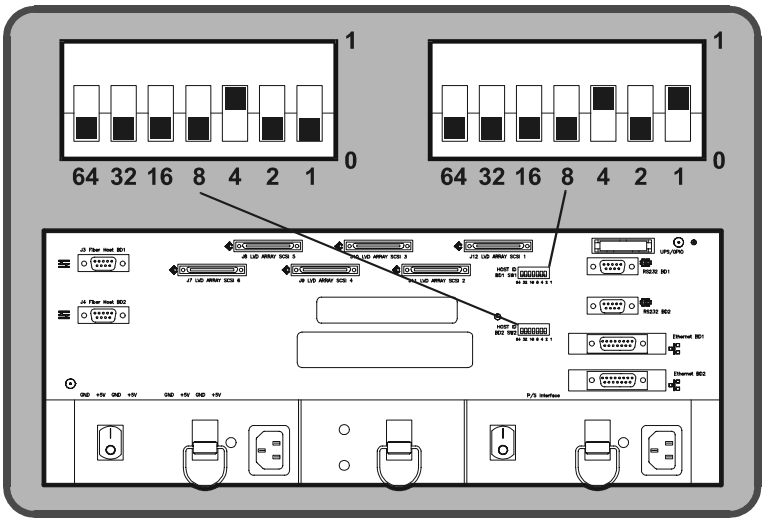
1. Set the ID switches on each disk enclosure as follows:
   - Set both switches on each enclosure to the same value
   - Each disk enclosure must be set to a unique ID.
   - For ease of management, set the ID for the disk enclosure directly beneath the controller enclosure to “0”, the next one down to 1, the next one down to “2”, etc.
2. Set the configuration DIP switches on as follows:
   - If the disk enclosure will be operating in full bus mode, set switch segment 1 to ON (1).
   - If the disk enclosure will be operating in split bus mode, set switch segment 1 to OFF (0).
   - Make sure all other switch segments are set to OFF (0).

Note The switch setting must be the same for each BCC in the disk enclosure. If the settings differ, a buzzer will sound. The settings must be corrected to use the disk enclosure.

Controller Enclosure

Set the Fibre Channel Host ID address for each controller using the 7-segment DIP switch. Each controller must have a unique ID regardless of the external Fiber Channel topology.

- The default ID for controller A is 5
- The default ID for controller B is 4



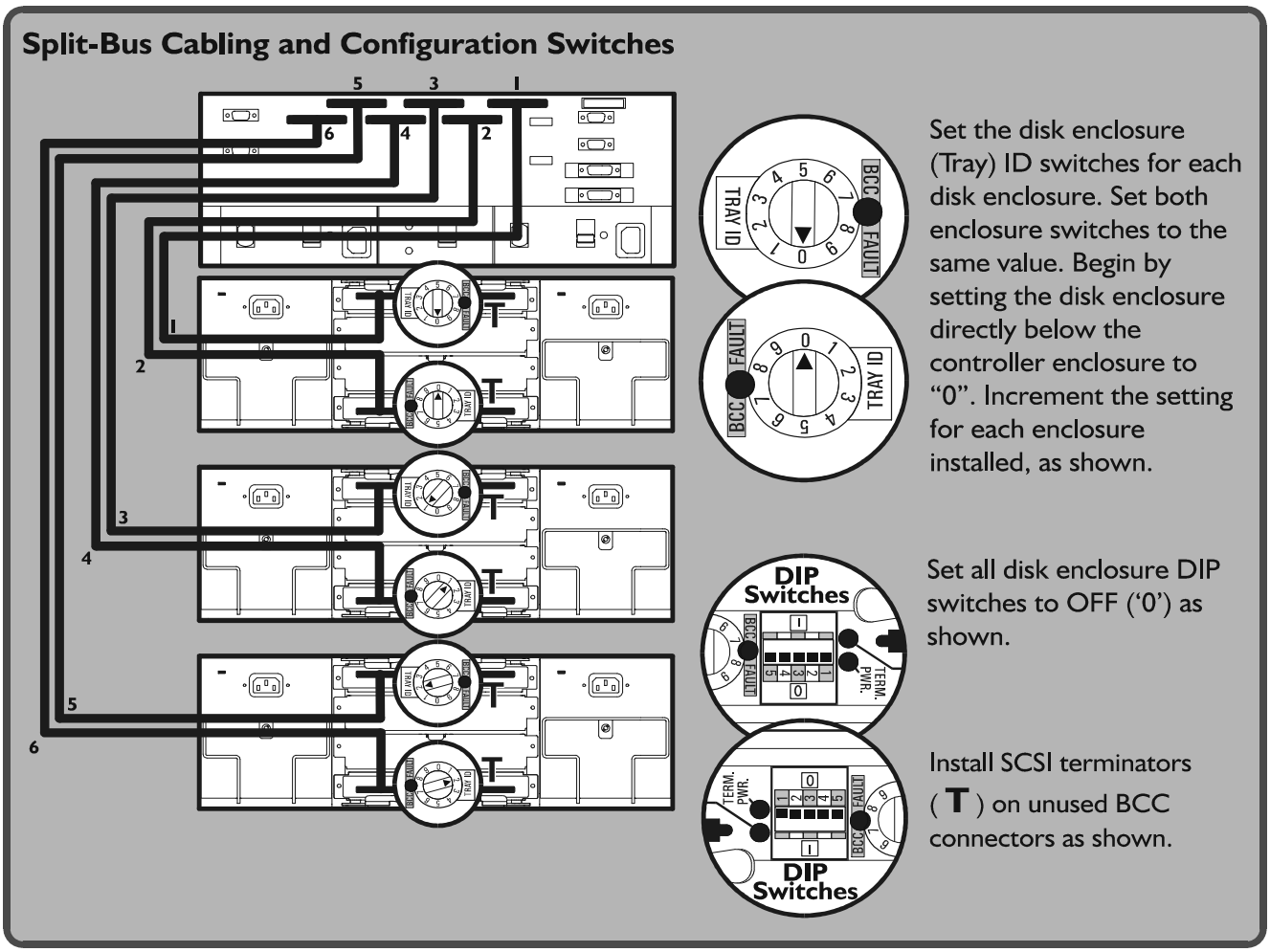
Connecting the Cabling

NOTE! It is critical that all SCSI cables be tightened securely. Use the following steps to ensure the cable connectors are seated properly.

1. Push the cable on to the enclosure connector and tighten the mounting screws finger tight.
2. Push on the connector again and retighten the mounting screws. Repeat once more.
3. Use a flat blade screwdriver to tighten the screw appropriately. Be sure the screw is not cross-threaded.

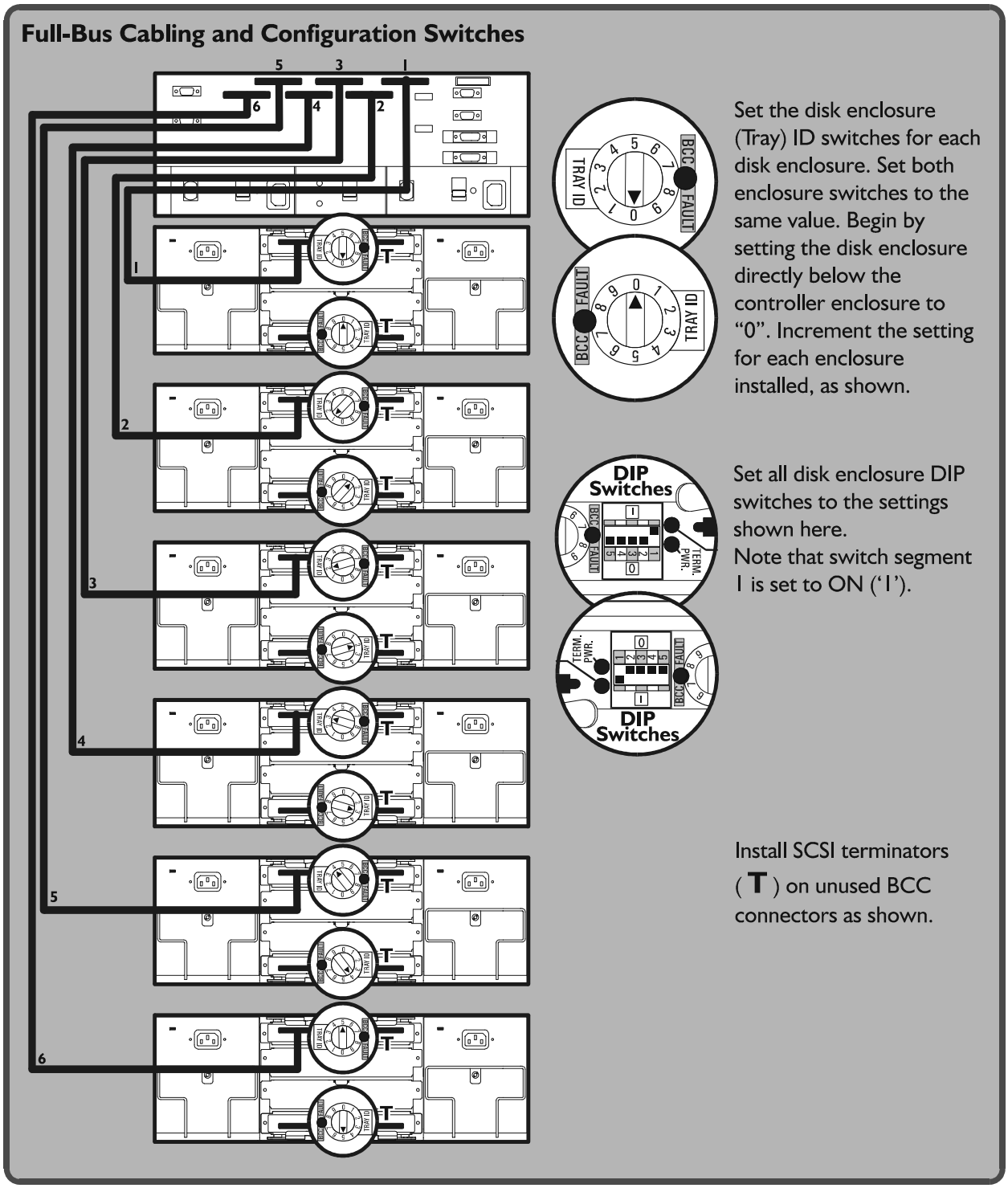
Split-Bus SCSI Cabling

If the disk enclosures will be operating in split-bus mode, connect the SCSI cabling as shown in the following figure. Install the SCSI terminators on the disk enclosures as shown, and install a SCSI terminator on all unused SCSI connectors on the controller enclosure.


Split-Bus Cabling and Configuration Switches
5
3
1
6
4
2
1
2
3
4
5
6
TRAY ID
BCC
FAULT
Set the disk enclosure (Tray) ID switches for each disk enclosure. Set both enclosure switches to the same value. Begin by setting the disk enclosure directly below the controller enclosure to "0". Increment the setting for each enclosure installed, as shown.
DIP Switches
TERM. PWR.
Set all disk enclosure DIP switches to OFF ('0') as shown.
Install SCSI terminators (T) on unused BCC connectors as shown.

Full-Bus SCSI Cabling

If the disk enclosures will be operating in full-bus mode, connect the SCSI cabling as shown in the following figure. Install the SCSI terminators on the disk enclosures as shown, and install a SCSI terminator on all unused SCSI connectors on the controller enclosure.


Full-Bus Cabling and Configuration Switches
5
3
1
6
4
2
1
2
3
4
5
6
T
TRAY ID
BCC
FAULT
Set the disk enclosure (Tray) ID switches for each disk enclosure. Set both enclosure switches to the same value. Begin by setting the disk enclosure directly below the controller enclosure to "0". Increment the setting for each enclosure installed, as shown.
DIP Switches
TERM. PWR.
Set all disk enclosure DIP switches to the settings shown here.
Note that switch segment 1 is set to ON ('1').
Install SCSI terminators (T) on unused BCC connectors as shown.

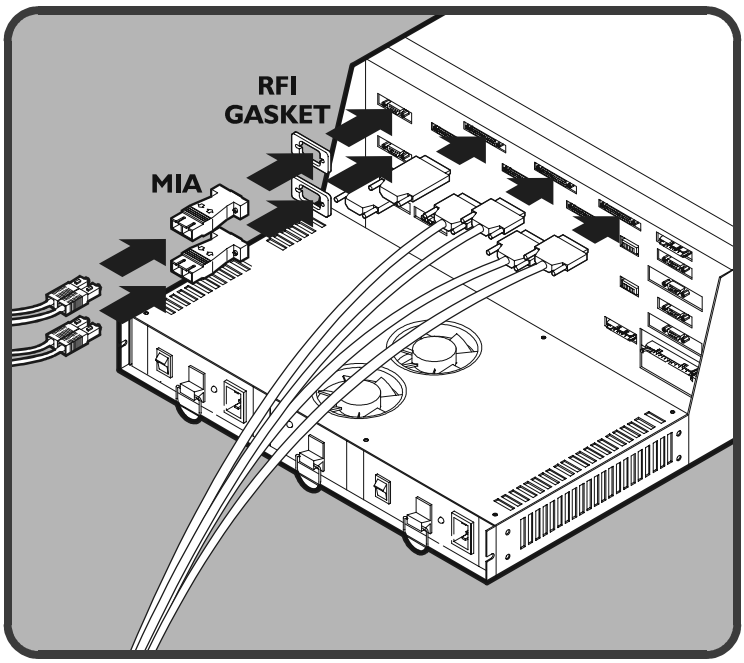
Fibre Channel Cabling

1. Install an MIA into each Fibre Channel connector on the enclosure.

   Make sure an RFI gasket is inserted between the MIA and the enclosure.

2. Connect the Fibre Channel cables to the MIAs.

3. Make sure there is a SCSI terminator in any used SCSI connectors on the controller enclosure.



Powering Up the Disk Array

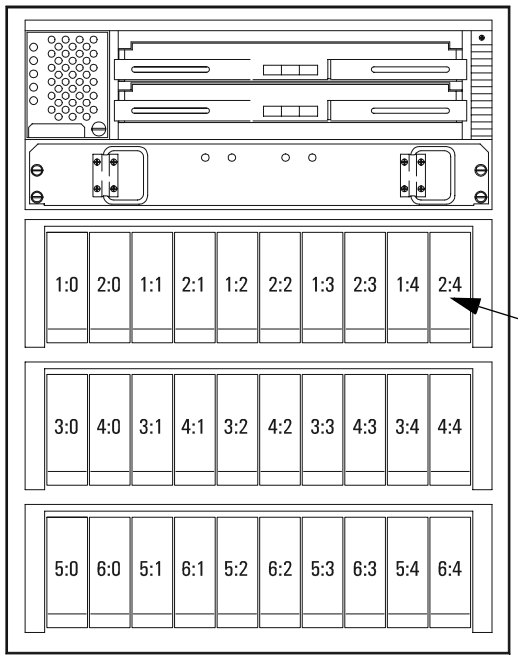
Note The proper power on sequence for the disk array components is to power on the disk enclosure first, followed by the controller enclosure. The components can also be powered on simultaneously. Do not power on the controller enclosure before the disk enclosures, or the controller will not detect the disks.

1. Power up each disk enclosure. The disk enclosure has a single power switch located in the upper right corner of the front panel.
2. Check the status LEDs on the disk enclosures to ensure no amber LEDs are on.
3. Power up the controller enclosure. The controller enclosure has two power switches located on the rear of the enclosure.
4. Check the status LEDs on the controller enclosure to ensure no amber LEDs are on.

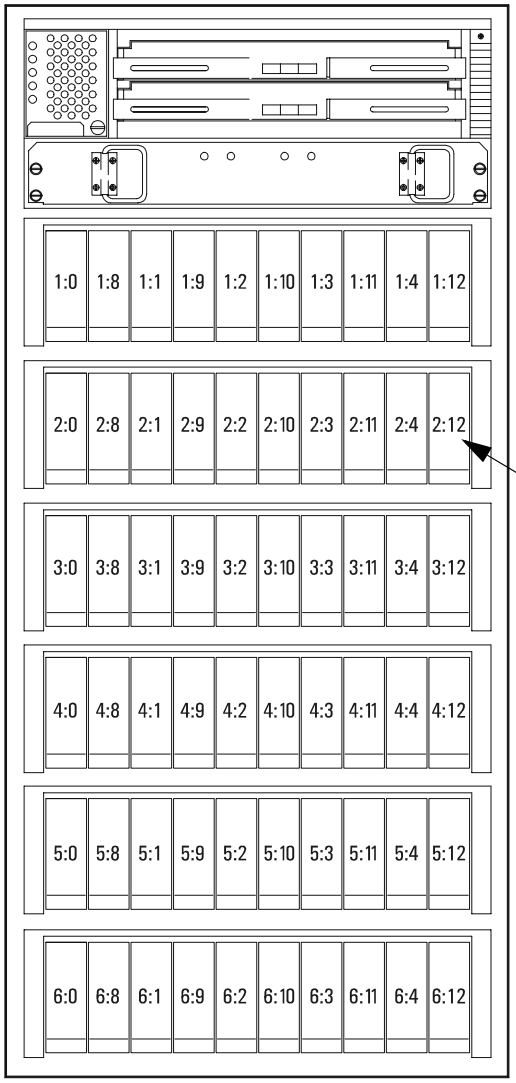
If any amber LEDS are on, refer to Chapter 6, Troubleshooting, of the *HP SureStore E Disk Array FC60 Service Manual* for assistance in identifying and correcting the problem.

Disk Module Addressing

Each disk module within the disk array is identified by its channel number and SCSI ID. These values will differ depending on which type of bus configuration is used for the disk enclosures. The following examples illustrate the addressing for split bus and full bus configurations.



Split Bus Disk Module Addressing



Full Bus Disk Module Addressing

Verifying Disk Array Connection

On Windows NT

The *HP Storage Manager 60-NT* software is used to verify that the disk array is visible to the Windows NT host. See the *HP Storage Manager 60-NT User's Guide* for instructions on installing and using the *HP Storage Manager 60-NT* software.

On HP-UX

To verify that the Disk Array FC60 is visible to the HP-UX host, run an ioscan by typing the following:

ioscan -fn

An output will be displayed similar to that in the following example. The sample ioscan shown includes entries for both disk array controllers: one at loop ID 4, and the other at loop ID 5 (loop IDs are determined by the Fibre Channel Host ID switch setting on the back of the controller enclosure). The virtual SCSI bus entries for both controllers are also shown.

Note The State of the each controller and its associated LUNs should be CLAIMED. Any other condition indicates that the host is having difficulty accessing the controller. If the State is not CLAIMED, refer to Chapter 6, Troubleshooting, of the *HP SureStore E Disk Array FC60 Service Manual* for assistance in identifying and correcting the problem.

```
Class     I    H/W Path           Driver   State     H/W Type   Description
=============================================================================
target    0    8/8.8.0.4.0.0      tgt      CLAIMED   DEVICE
disk      0    8/8.8.0.4.0.0.0    sdisk    CLAIMED   DEVICE     HP A5277A
                                  /dev/dsk/c0t0d0  /dev/rdsk/c0t0d0
disk      1    8/8.8.0.4.0.0.1    sdisk    CLAIMED   DEVICE     HP A5277A
                                  /dev/dsk/c0t0d1  /dev/rdsk/c0t0d1
disk      2    8/8.8.0.4.0.1.0    sdisk    CLAIMED   DEVICE     HP A5277A
                                  /dev/dsk/c0t1d0  /dev/rdsk/c0t1d0
disk      3    8/8.8.0.4.0.2.0    sdisk    CLAIMED   DEVICE     HP A5277A
                                  /dev/dsk/c0t2d0  /dev/rdsk/c0t2d0
disk      4    8/8.8.0.4.0.3.0    sdisk    CLAIMED   DEVICE     HP A5277A
                                  /dev/dsk/c0t3d0  /dev/rdsk/c0t3d0
disk      5    8/8.8.0.4.0.3.7    /sdisk   CLAIMED   DEVICE     HP Universal Xport
                                  /dev/dsk/c0t3d7  /dev/rdsk/c0t3d7
target    4    8/8.8.0.5.0.0      tgt      CLAIMED   DEVICE
disk      6    8/8.8.0.5.0.0.0    sdisk    CLAIMED   DEVICE     HP A5277A
                                  /dev/dsk/c1t0d0  /dev/rdsk/c1t0d0
disk      7    8/8.8.0.5.0.0.1    sdisk    CLAIMED   DEVICE     HP A5277A
                                  /dev/dsk/c1t0d1  /dev/rdsk/c1t0d1
disk      8    8/8.8.0.5.0.1.0    sdisk    CLAIMED   DEVICE     HP A5277A
                                  /dev/dsk/c1t1d0  /dev/rdsk/c1t1d0
disk      9    8/8.8.0.5.0.2.0    sdisk    CLAIMED   DEVICE     HP A5277A
                                  /dev/dsk/c1t2d0  /dev/rdsk/c1t2d0
disk     10    8/8.8.0.5.0.3.0    sdisk    CLAIMED   DEVICE     HP A5277A
                                  /dev/dsk/c1t3d0  /dev/rdsk/c1t3d0
disk     11    8/8.8.0.5.0.3.7    /sdisk   CLAIMED   DEVICE     HP Universal Xport
                                  /dev/dsk/c1t3d7  /dev/rdsk/c1t3d7
target    8    8/8.8.0.255.0.4    tgt      CLAIMED   DEVICE
ctl       0    8/8.8.0.255.0.4.0  sctl     CLAIMED   DEVICE     HP A5277A
                                  /dev/rscsi/c2t4d0
target    9    8/8.8.0.255.0.5    tgt      CLAIMED   DEVICE
ctl       1    8/8.8.0.255.0.5.0  sctl     CLAIMED   DEVICE     HP A5277A
                                  /dev/rscsi/c2t5d0
```

1 2 3 4 5 6 7

State should be CLAIMED. Any other condition indicates that the host is having difficulty communicating with the associated controller and LUNs.

1 **Entry for virtual SCSI bus 0 on controller module with loop ID 4 (VSA)**

2 **Entry for virtual SCSI bus 1 on controller module with loop ID 4 (VSA)**

3 **Entry for virtual SCSI bus 2 on controller module with loop ID 4 (VSA)**

4 **Entry for virtual SCSI bus 3 on controller module with loop ID 4 (VSA)**

5 **Entry for UTM LUN (LUN 31 used by default)**

6 **Entry for disk array controller module with loop ID 4 (PDA)**

7 **Entry for disk array controller module with loop ID 5 (PDA)**

Configuring the Disk Array FC60 for Use as a Boot Device on HP-UX 11.0

The Disk Array FC60 is supported for use as boot device on the following HP 9000 Servers running HP-UX 11.0: K-Class, D-Class, N-Class, L-Class

The following procedure is used to when installing a new host that will use a new Disk Array FC60 as its boot device. This purpose of this procedure is to create a LUN on the disk which can be used to install the operating system.

Step 1. Run AR60Diag

1. Insert the *HP-UX Support Plus CD-ROM* in a CD-ROM drive on the host.
2. Initiate the boot process.
3. From the Main Menu, select the option to search for boot devices. The host will locate and display any hardware boot devices.
4. Select the device containing the *HP-UX Support Plus CD-ROM*. When prompted to interact with ISL, type **y**

   The system will boot into ISL.
5. From the ISL prompt, type:

   ode
6. From the ODE prompt, type:

   ar60diag

   Enter the diagnostic password when prompted.
7. AR60Diag scans for disk arrays and displays the results. The results should include an entry for each controller in the disk array.

Step 2. Replace LUN 0

1. From the AR60Diag prompt, type:

   unbind controller 0 lun 0
2. When prompted to replace LUN 0 with a different configuration, press **y**.
3. Enter the desired RAID level you want to use for LUN 0.
4. Enter the number of disks in the LUN. For a RAID 1 LUN, you must use an even number of disks.
5. Enter the channel number and ID for each disk in the LUN. When all the disks have been entered, the information is displayed for verification.
6. When prompted to continue, press y.

   The process of replacing LUN 0 will begin, and a message will indicate when it is complete.

Step 3. Setting Controllers to Active Mode

1. From the AR60Diag prompt, type:

   config RDAC

Step 4. Install HP-UX

Once a LUN is created on the disk array, the operating system can be installed. Follow the instructions provided with HP-UX installation media for installing the operating system.

Note The *HP-UX Support Plus CD-ROM* does not include installation media. The operating system is installed using Installation Media 99OP, release 9905 or later.

Installing the Management Software

HP-UX

The following HP-UX patches are required for the HP SureStore E Disk Array FC60.

- **HP-UX 10.20**: PHCO_22627 and PHSS_22846
- **HP-UX 11.0**: PHCO_22628 and PHSS_22847

The required patches can be downloaded from the following web sites:

http://us-support2.external.hp.com/index.html/ (External web site)
ftp://hpatlse.atl.hp.com/hp-ux_patches/ (Internal web site)

Note The patches are not currently included on the *HP-UX Support Plus CD-ROM*. They must be downloaded from the indicated web sites.

To install the software:

1. Download and install the required patches.
2. Verify that the required patches are installed using the following command:

   swlist

3. Create the required device files (this is not required if the system was re-booted) using the following command:

   insf -e

4. Re-scan for the FC60 disk arrays using the following command:

   amdsp -R

Windows NT

Refer to the *HP Storage Manager 60-NT User's Guide* for instructions on installing the management software for Windows NT.

Downgrading the Disk Array Firmware for HP-UX 11.11 Hosts

Controller firmware HP08 is not supported on HP-UX 11.11. If the disk array is being installed on a host running HP-UX 11.11, it will be necessary to downgrade the controller firmware to HP03 after installing the software. If the host is not running HP-UX 11.11, skip this procedure.

1. Identify the version of firmware on the disk array controllers by typing:

   amdload -i ArrayID

2. If the controller firmware is HP08, downgrade the firmware to HP03 following the instructions in "Downgrading from HP08 to HP03 Firmware". If the controller firmware is not HP08, continue with "Configuring the Disk Array" on page 17.

Downgrading from HP08 to HP03 Firmware

The following files are required for downgrading to HP03 firmware:

- 03010302.bwd
- 03010303.apd
- 42032dx.dl

Download the HP03 controller firmware files to the host from the following site:

http://fwserver.mayfield.hp.com/firmware

The files are packaged together in a single tar file.

CAUTION *When downgrading controller firmware, make sure you download the files in the recommended order.*

To downgrade controller firmware from HP08 to HP03:

1. Disable the UTM by typing:

   ammgr -u ArrayID

2. Reset both controllers manually or by power cycling the disk array.

3. Execute the following commands in the indicated order to ensure the UTM is disabled properly:

   ioscan
   insf -e
   amdsp -R

Note If the UTM LUN is not disabled before downgrading the firmware, the UTM LUN (31 by default) will continue to exist after the downgrade is complete. The LUN will be assigned a status of NOT RESPONDING. This LUN cannot be accessed and cannot be replaced, so failure to disable the UTM LUN results in the loss of a LUN.

4. Download the HP03 appware code to both controllers by typing:

   amdload -C all *path*\03010303.apd <ArrayID>

5. Download the HP03 bootware code to both controllers by typing:

   amdload -C all *path*\03010302.bwd <ArrayID>

6. Download the HP03 NVSRAM code to both controllers by typing:

   amdload -C all *path*\42032dx.dl <ArrayID>

7. Check the firmware version now installed on the controllers by typing:

   amdload -i ArrayID

Configuring the Disk Array

HP-UX

Step 1. Determine the Disk Array ArrayID

The ArrayID is used to identify the disk array when performing the remaining tasks, so the first step is to determine the ArrayID.

To display the ArrayID, type:

amdsp -i

Record the ArrayID (its S/N) for use in performing the remaining steps.

Array ID: _____

Step 2. Assign an Alias Name (Optional)

To assign an alias, type:

ammgr -D <ArrayAlias> <ArrayID>

An alias can contain up to 16 of the following characters: letters, numbers, pound sign (#), period (.), and underscore (_). All other characters are invalid.

Step 3. Reformat Disk Array Media

CAUTION *This step destroys all data on the disk array and remove any LUN structure that has been created. If there is data on the disk array, make sure it is backed up before performing this step.*

The disk media should be formatted to return it to its factory default configuration. This operation will destroy any data on the disk array and create a 10 MB LUN 0.

To format the disk media, type:

amutil -syswipe [-force] <ArrayID>

Use the force option if there are other LUNs on the disk array in addition to LUN 0. Wait approximately two minutes for this operation to complete before performing the next step.

Note As the syswipe operation executes, watch the activity LEDs on the disk modules. Each LED should illuminate briefly, starting with the first disk on the first channel, and continuing in a orderly sequence through all the disks. If the LED on any disk remains on noticeably longer than the others, it may indicate that the syswipe operation has encountered a problem. In this case, retry the syswipe operation. Do not continue with the next step until the syswipe has completed successfully.

Step 4. Set Both Controllers to Active/Active State

The preceding step sets controller B to the passive states. To reset both controllers to the active state, type:

ammgr -c AA <ArrayID>

Step 5. Replace LUN 0

To replace the default 10 MB LUN 0 with a LUN of useful size, type:

amcfg -R <cntrlr>:0 -d <channel:ID>,<channel:ID>..... -r <RAIDlevel> <options> <ArrayID>

For example, the following command replaces LUN 0 with a RAID 0/1 LUN using four disks:

amcfg -R A:0 -d 1:0,2:0,3:0,4:0 -r 1 <options> <ArrayID>

Step 6. Disable WCE On All Disks

For optimum data protection, WCE (Write Cache Enable) should be disabled on all disks in the array.

To disable WCE on all disks, type:

amutil -w <ArrayID>

Note To ensure optimum protection against data loss, it is recommended that Write Cache Enable be disabled on all disks in the array. Disabling disk WCE will impact disk array performance. However, it reduces the potential for data loss during a power loss.

Step 7. Set Disk Array Time and Date

To set the controller date and time, type:

ammgr -t <ArrayID>

Step 8. Bind LUNs

When performing this step, consult with the customer to ensure that the desired LUN configuration is created on the disk array.

To bind a LUN, type:

amcfg -L <cntrlr>:<LUN> -d <channel:ID>,<channel:ID>,..... -r <RAIDlevel> <options> <ArrayID>

For example, the following command creates LUN 1 as RAID 5 using six disks:

amcfg -L A:1 -d 1:1,2:10,3:10,4:1,5:1,6:1 -r 5 <options> <ArrayID>

Step 9. Add Global Hot Spares (Optional)

Hot spares provide an additional level of data protection. A hot spare automatically replaces a failed disk, restoring redundancy and protecting against a second disk failure. For maximum protection against disk failure, it is recommended that one hot spare be created per channel.

To add a global hot spare, type:

ammgr -h channel:ID <ArrayID>

For example, the following command creates a global hot spare:

ammgr -h 4:3 <ArrayID>

Step 10. Install Special Device Files

After binding LUNs, install special device files on the LUNs. This makes the LUNs usable by the operating system.

To install the special device files, type:

ioscan -fnCdisk

From the ioscan results, locate the hardware paths showing no hardware by typing:

insf -H <hardwarepath> -e

Step 11. Check Disk Array Status

The final step is to display the disk array status to ensure that all features are enabled and that the array is working properly.

To display disk array status, type:

amdsp -a <ArrayID>

The following is an example of the status output with the correct values for specific fields. Only a portion of the entire display is shown.

```
Vendor ID           = HP
Product ID          = A5277A
Array ID            = 000A00A0B80673A6
Array alias         = Array1
----------------------------------------
Array State           = READY
Server name           = speedy
Array type            = 3
Mfg. Product Code     = 348-0040789

--- Disk space usage --------------------
Total physical               = 271.4 GB
Allocated to LUNs            = 135.4 GB
Used as Hot spare            = 0.0 GB
Unallocated (avail for LUNs) = 0.0 GB
----------------------------------------

Vendor ID           = HP
Product ID          = A5277A
Array ID            = 000A00A0B80673A6
Array alias         = Array1
----------------------------------------
LUN       Status        Capacity   Ctrl  RAID  Segment  Disks
---  ----------------  ---------  ----  ----  -------  -----
  0  OPTIMAL             16.9 GB   A     1          4  1:0
                                                      3:0
  1  OPTIMAL             16.9 GB   B     1          4  2:0
                                                      4:0
   .
   .
 31  UTM:GOOD

   LUN  WCE  RCD  CME  CWOB      WCA  RCA  CMA
   ---  ---  ---  ---  ----      ---  ---  ---
     0   X         X              X    X    X
     1   X         X              X    X    X
   .
   .
   .
Total capacity of LUNs on controller A = 84.6 GB
Total capacity of LUNs on controller B = 50.8 GB
Total capacity of all configured LUNs = 135.4 GB
```

LUN Information - the status of each LUN should be OPTIMAL

LUN 31 is the default UTM LUN. GOOD status indicates the UTM is enabled and operating normally. See note below!

Cache Status for each LUN - all LUNs should have the status values shown

LUNs should typically be distributed between both controllers for best performance. LUN ownership can be reassigned to balance LUN usage.

Note

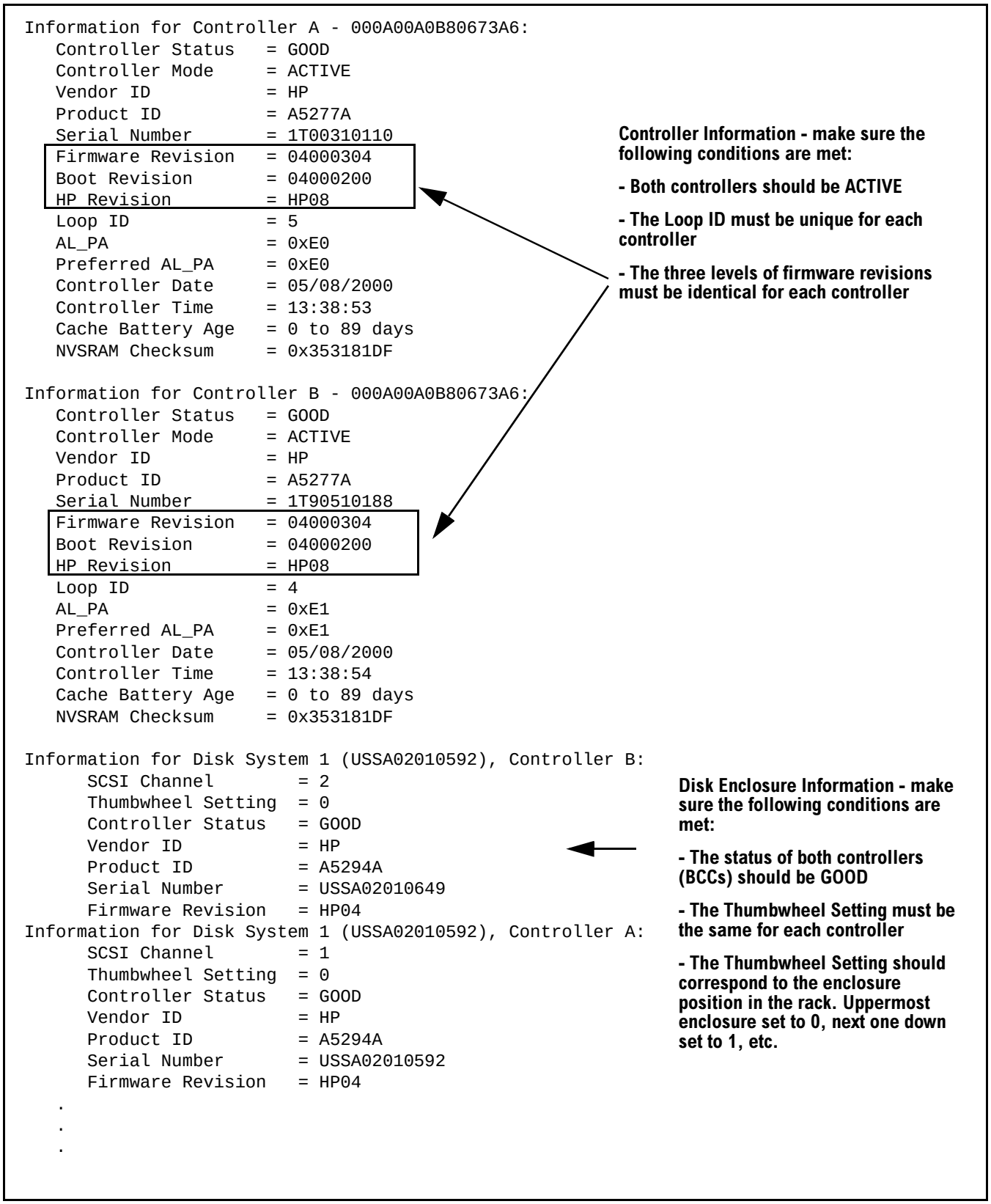
Missing UTM LUN 31

If the required patches for HP08 firmware are not installed on the host, the host will not recognize or display UTM LUN 31. If LUN 31 is not displayed, install the required patches as described in "Installing the Management Software" on page 14.

```
Vendor ID           = HP
Product ID          = A5277A
Array ID            = 000A00A0B80673A6
Array alias         = Array1
-----------------------------------------

SCSI Channel:ID        = 1:0
Enclosure              = 0
Slot                   = 0
Disk State             = OPTIMAL
Disk Group and Type    = 060E86000238C6360F LUN
Capacity               = 17.0 GB
Manufacturer and Model = SEAGATE ST318203LC
Serial Number          = LRB61150
Firmware Revision      = HP01
   .
   .
   .
Total capacity of all installed physical disks = 271.4 GB

Hot Spare Activity
--------------------
None

Vendor ID           = HP
Product ID          = A5277A
Array ID            = 000A00A0B80673A6
Array alias         = Array1
-----------------------------------------
Disk Group 060E86000738C6395B:
   Disk Group Type    = LUN
   Number of LUNs     = 1
   LUN(s)             = 6
   Remaining Capacity = 0.0 MB
   RAID Level         = 1
   Segment Size       = 4 KB
   Disks:
   1:3  3:3
   .
   .
   .
Total remaining capacity for LUN disk groups = 0.0 MB
```

Disk Information - the status of each disk should be Optimal for each disk assigned to a LUN.

Disk Group Information - this is another representation of the LUN information


Information for Controller A - 000A00A0B80673A6:
Controller Status = GOOD
Controller Mode = ACTIVE
Vendor ID = HP
Product ID = A5277A
Serial Number = 1T00310110
Firmware Revision = 04000304
Boot Revision = 04000200
HP Revision = HP08
Loop ID = 5
AL_PA = 0xE0
Preferred AL_PA = 0xE0
Controller Date = 05/08/2000
Controller Time = 13:38:53
Cache Battery Age = 0 to 89 days
NVSRAM Checksum = 0x353181DF
Information for Controller B - 000A00A0B80673A6:
Controller Status = GOOD
Controller Mode = ACTIVE
Vendor ID = HP
Product ID = A5277A
Serial Number = 1T90510188
Firmware Revision = 04000304
Boot Revision = 04000200
HP Revision = HP08
Loop ID = 4
AL_PA = 0xE1
Preferred AL_PA = 0xE1
Controller Date = 05/08/2000
Controller Time = 13:38:54
Cache Battery Age = 0 to 89 days
NVSRAM Checksum = 0x353181DF
Information for Disk System 1 (USSA02010592), Controller B:
SCSI Channel = 2
Thumbwheel Setting = 0
Controller Status = GOOD
Vendor ID = HP
Product ID = A5294A
Serial Number = USSA02010649
Firmware Revision = HP04
Information for Disk System 1 (USSA02010592), Controller A:
SCSI Channel = 1
Thumbwheel Setting = 0
Controller Status = GOOD
Vendor ID = HP
Product ID = A5294A
Serial Number = USSA02010592
Firmware Revision = HP04
Controller Information - make sure the following conditions are met:
- Both controllers should be ACTIVE
- The Loop ID must be unique for each controller
- The three levels of firmware revisions must be identical for each controller
Disk Enclosure Information - make sure the following conditions are met:
- The status of both controllers (BCCs) should be GOOD
- The Thumbwheel Setting must be the same for each controller
- The Thumbwheel Setting should correspond to the enclosure position in the rack. Uppermost enclosure set to 0, next one down set to 1, etc.

```
Vendor ID           = HP
Product ID          = A5277A
Array ID            = 000A00A0B80673A6
Array alias         = Array1
----------------------------------------
Overall State of Array          = READY
Array configuration:
   Cache Block Size             = 4 KB / 4 KB
   Cache Flush Threshold        = 80 % / 80 %
   Cache Flush Limit            = 100 % / 100 %
   Cache Size                   = 256MB / 256MB

Vendor ID           = HP
Product ID          = A5277A
Array ID            = 000A00A0B80673A6
Array alias         = Array1
----------------------------------------
Array Controller Subsystem:
    Controller A: GOOD
    Controller B: GOOD
            PS 1: GOOD
            PS 2: GOOD
           Fan 1: GOOD
           Fan 2: GOOD
     Temp Sensor: GOOD
         Battery: GOOD
Disk System 1 - USSA02010592:
BCC Controller B: GOOD
BCC Controller A: GOOD
            PS 1: GOOD
            PS 2: GOOD
           Fan 1: GOOD
           Fan 2: GOOD
     Temp Sensor: GOOD
Disk System 2 - USSA02010595:
BCC Controller B: GOOD
BCC Controller A: GOOD
            PS 1: GOOD
            PS 2: GOOD
           Fan 1: GOOD
           Fan 2: GOOD
     Temp Sensor: GOOD
No LUNs are currently rebuilding
```

Cache settings

Component status - all hardware components should be GOOD

Windows NT

Perform the following steps to configure the disk for operation on a Windows NT host. Refer to the *HP Storage Manager 60-NT User's Guide* for detailed instructions on performing each of these tasks.

1. Add the disk array to the SM60-NT management topology.
2. Set up any alert notifications.
3. Rename the disk array.
4. Create the desired volume structure. Replace the default 10 Mbyte volume if necessary.
5. Add hot spares ar required.
6. Set up storage partitions if this premium feature is enabled.
7. Set the disk array controller clocks